DUCTILE FAULT ESE

CZgc

v. 8/25/2016

— -0.5 km

					1				-1.0	km		-1	.0 km	= () (, , ,	= (<u>±</u>		## (<u> </u>			<u> </u>								-1.0 km				
cross sections - no vertical exaggeration measurement in kilometers, reference mean sea level																																		
				OXIDES IN PERCENT																														
SAMPLE ID	GEOLOGIST	ROCK TYPE	MAP UNIT	SiO2	TiO2	Al2O3	Fe2O3	MnO	MgO	CaO	Na2O	K2O	P2O5	Cr2O3	LOI	TOTAL	Ag	As	Au	Ba	Ce	Co	Cu	Nd	Ni	Sr	Ta	Zn	Zr					
WT02-3660	Blake	Gibbs Creek pluton	CZgc	49.82	0.64	15.65	10.50	0.18	8.12	10.91	2.09	0.25	0.06	0.02	1.65	99.90	<1	NA	10	56.6	8.6	41.1	126	5.4	90	132	< 0.5	70	45	Disclaimer: This Open-File report is preliminary and has not been reviewed for conformity with the North Carolina Geological Survey editorial standards or with the				
WT02-4492	Blake	metagranitoid	CZgc	64.38	0.79	16.3	6.52	0.11	2.17	1.67	1.62	3.32	0.13	0.01	2.75	99.89	<1	NA	7	576	83.6	13.3	72	36.8	23	154	0.7	85	186					
WT02-3560	Blake	amphibolite	CZgc	48.84	1.67	13.4	13.87	0.22	7.06	10.76	2.11	0.38	0.13	0.01	1.00	99.48	<1	NA	6	26.9	11.4	41.3	141	11.3	51	90.2	< 0.5	172	82					
W-grt	Grimes	granite	PPwg	77.60	0.08	12.70	0.71	0.02	0.08	0.61	3.66	4.46	0.00	NA	0.30	100.22	NA	NA	4	135	28	68	NA	10	NA	78	NA	19	109	North American Stratigraphic Code. Further revisions or corrections to this preliminary map may occur prior				
WT-1026	Phillips	metagranitoid	CZgcf	62.19	0.98	17.32	7.4	0.09	2.42	1.25	0.8	4.5	0.11	0.01	2.75	99.98	<1	NA	5	791	91.9	17.5	10	40.8	36	75	1.6	100	269	to its release as a North Carolina Geological Survey				
WT02-3956-F	Blake	metatonalite	CZtc	65.24	0.63	16.04	4.5	0.06	1.68	4.22	3.9	2.33	0.15	< 0.01	0.65	99.54	0.02	0.5	2	432	38.5	10.5	16	20.2	12	429	0.7	43	164	map.				
WT02-3956-M	Blake	greenstone	CZtc	50.45	1.93	14.66	12.16	0.18	5.32	8.82	3.08	1.13	0.26	0.02	0.85	98.96	0.04	0.5	2	194	34.8	38.9	102	21.1	33.2	357	0.9	101	149	Because and the support of the HO Confession Commen				
K-291	Grimes	metagranitoid	CZtc	65.70	0.65	15.20	3.76	0.07	1.15	3.15	4.55	3.37	0.16	NA	0.45	98.21	NA	NA	NA	754	56	11	15	16	4	299	1.9	55	328	Research partially supported by the U.S. Geological Survey, National Cooperative Geologic Mapping Program under				
Wf-1	Grimes	metagranitoid	CZtc	61.40	0.78	17.90	5.54	0.08	2.02	4.52	4.66	1.70	0.23	NA	1.30	100.13	NA	NA	3	475	47	45	21	19	9	466	NA	61	254	STATEMAP (Awards - 2001, 01HQAG0061; 2002, 02HQAG0043) and EDMAP (Award – 1998,				
Wm-1	Grimes	metadiorite	CZtc	54.60	1.64	16.50	9.02	0.14	4.60	6.57	3.62	1.74	0.30	NA	1.05	99.78	0.8	NA	6	336	37	48	19	19	45	419	NA	68	206	98HQAG2100 to Robitaille). Additional data collected in 2003. This map and explanatory information is submittedfor				
TR99-4	Robaitalle	Middle Creek gneiss -mafic	CZmca	50.20	0.67	21.60	6.76	0.11	4.55	11.40	3.65	0.38	0.13	NA	0.65	100.20	0.4	<1	<2	112	18	28	30.1	12	23	563	< 0.5	52	47	publication with the understanding that the United States				
TR01-248	Robaitalle	Gibbs Creek pluton	CZgc	65.6	0.798	15.6	6.13	0.1	2.23	1.91	2.28	3.05	0.09	NA	2.45	100.40	2	2	5	553	71	17.4	98.2	27	31	169	1.4	119	277	Government is authorized to reproduce and distribute reprints for government use.				
TR01-396	Robaitalle	Gibbs Creek pluton	CZgc	65.3	0.837	15.9	5.95	0.1	2.3	2.92	2.82	3.03	0.12	NA	0.90	100.30	1.1	<1	4	548	87	15.3	69.8	51	33	194	< 0.5	85.8	241					

MAP LOCATION

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CZgc 63.9 0.885 16.1 6.36 0.15 2.31 2.5 3.17 2.8 0.12 NA 1.60 100.10 1.8 2 4 471 77 19.6 15.4 49 30 228 1.1

Powder material processing conducted at the Petrology Preparation Laboratory of the Department of Geography and Geology at the University of North Carolina Wilmington. Geochemical analyses completed by SGS Minerals, Toronto, Canada for 11 major and 49 trace elements. Whole-rock analyses using method codes XRF76Z + 75V, IMS95A, and FAI303, and individual element method code ICMS12B for Ta.

1,000 500 0 1,000 2,000 3,000 4,000 5,000 6,000 7,000

CONTOUR INTERVAL 10 FEET

NA = No sample analysis PPM = parts per million

LOI = loss on ignition

The electronic files of the geochemical data are available upon request from the North Carolina Geological Survey.

COMPILED GEOLOGIC MAP OF THE WILTON 7.5-MINUTE QUADRANGLE, GRANVILLE, VANCE AND FRANKLIN COUNTIES, NORTH CAROLINA

Geology by David E. Blake, Kenneth R. Robitaille, Cindy Phillips, Channa Witanachchi Richard M. Wooten, Will Grimes, Jeremy D. Pesicek, and Benjamin D. Grosser Digital representation by Michael A. Medina and Cindy M. Phillips.

and actinolite rock, locally with octahedral magnetite crystals.

CZflg - Falls leucogneiss: Pinkish-gray to orange-tan, fine- to medium-grained, weakly to moderately foliated, strongly lineated, leucocratic (CI less than 5), biotite-magnetite granitic gneiss.



Base topographic map is digital

raster graphic image of the

FISHINGFAULT

Wilton 7.5-minute USGS quadrangle (1977).

Trcs/si₂

WEST

-0.5 km

107 MILS

25 MILS

UTM GRID AND 1974 MAGNETIC NORTH

CZtg - Unfoliated biotite metatonalite and minor metagranodiorite: Variably green-grey to grey-white, medium to coarse grained biotite metatonalite, and metagranodiorite. Quartz is a bluish to locally light grey, with plagioclase commonly showing

CZbto - Hornblende-bearing biotite tonalite: Leucocratic to mesocratic (CI-15-30), intermediate light green to gray-green, to dark gray-green-black, medium-grained, metamorphosed hypidiomorphic granular biotite ± hornblende tonalite and minor granodiorite. Crosscut by mm- to cm-scale metamorphosed trondhjemite, monzonite, and granodiorite dikes. Commonly forms hillside boulder outcrops and stream waterfalls, as well as massive bluff outcrops along the Tar River. Saussuritied and seriticized plagioclase and blue-gray quartz phenocrysts form leucocratic domains that contrast with mesocratic chloritized domains of hornblende and biotite. Locally, a weak "swirly" compositional layering appears in weathered outcrops that have a dark coloration. Some mm-scale black "clots" that range up to 1 cm may be relict hornblende or recrystallized greenstone clasts. Cm- to m-scale enclaves of greenstone, either very fine-grained diorite or andesite, are conspicuous throughout the

CZmd - hornblende metadiorite: Gray, to dark gray to green-black, fine- to coarse-grained, quartz, hornblende metadiorite with subordinate hornblende metagabbro. Includes minor metatrondhjemite (quartz-andesite) dikes. Similar to CZgbdi, but quartz hornblende metadiorite, and locally hornblende, quartz metadiorite make up the bulk of the unit. Accessory pyrite locally present. Accessory magnetite associated with chloritized hornblende is common, and epidote group minerals commonly replace plagioclase (albite to andesine). Generally non-foliated but localized weakly foliated varieties occur. Typically includes

with subordinate hornblende metadiorite. Includes minor fine-grained metatrondhjemite dikes. Accessory pyrite locally present. Metadiorite locally contains accessory to minor amounts of quartz. Accessory magnetite associated with chloritized hornblende is common, and sericite and epidote group minerals commonly replace plagioclase (albite to andesine). Poikilitic hornblende phenocrysts with plagioclase inclusions locally present in coarser-grained varities. Generally non-foliated but weakly foliated varieties occur. Typically includes metabasalt and meta-andesite greenstone. (Lithologically similar to CZtc

hornblende, quartz meta-andesite and metadiorite, metatrondhjemite and subordinate fine-grained metadiorite. Chlorite partially

CZgc - Gibbs Creek pluton: Light green to gray-green, fine- to medium-grained, leucocratic (CI less than 20) biotite +/hornblende metagranodiorite that develops a porphyritic facies and an equigranular facies. Chlorite and white mica indicate a metamorphic overprint of biotite, hornblende, and feldspar. Millimeter- to centimeter-scale, relict feldspar phenocrysts suggest a porphyritic texture in western portions of the pluton, and locally throughout the pluton. Eastern portions of the pluton are equigranular in relict phaneritic texture. Cm- to meter-scale enclaves of foliated fine-grained amphibolite to epidosite, and foliated biotite-chlorite metagranitoid, are conspicuous throughout the pluton, especially in its central portions. Four pods of

CZgcf - foliated Gibbs Creek pluton: Foliated and locally lineated equivalent of the metagranodiorite. Chlorite and white mica define a metamorphic overprint upon biotite, hornblende and feldspar, and are well developed in phyllonitic to mylonitic fracture and shear foliation zones. Less foliated rocks develop a sheen due to fine-grained, oriented white mica overprint of feldspar. Millimeter- to centimeter-scale relict feldspar phenocrysts define a porphyroclastic microstructure. Locally zones of

CZct - Carolina terrane metagranitoid: Orange-tan to pinkish tan, fine- to medium-grained, highly fractured, leucocratic (CI generally less than 5), biotite-bearing metatrondjhemite to metagranodiorite. Locally, biotite can increase in abundance

CZfp - felsic phyllonite: Buff to gray, fine-grained, well foliated and locally lineated, leucocratic (CI less than 5), felsic to quartzitic

CZtc - Tabbs Creek meta-igneous suite: Variably green colored, fine- to medium-grained, variably fractured, greenstone to metagabbro and metadiorite. Crosscut by fine- to coarse-grained biotite hornblende meta-quartz diorite to metagranodiorite

CZtcf - foliated Tabbs Creek meta-igneous suite: Foliated equivalent of variably green colored, fine- to medium-grained, variably fractured, greenstone to metagabbro and metadiorite and crosscutting fine- to coarse-grained biotite hornblende meta-quartz diorite to metagranodiorite, and locally metatrondhjemite to metagranite. Locally chlorite and white mica

CZgdf - foliated Tabbs Creek metagranodiorite: Gray-green, fine- to coarse-grained, well foliated and lineated, leucocratic (CI less than 15) metagranodiorite. Chlorite and white mica define a variably developed protomylonitic to mylonitic foliation and stretch lineation. Relict bluish gray quartz and feldspar define a porphyroclastic microstructure. Also includes light green to dark green, fine- to medium-grained, massive, chlorite-epidote-rich greenstone and locally, green, fine-grained, well

define fracture and shear foliations.

foliated and lineated, chlorite phyllite south of the Tar River. CZvgr - Felsic meta-intrusive suite (Vance County pluton): Leucogranite, quartz monzonite, trondjemite and granodiorite. Generally leucocratic ranging from pale pink to light tan and light gray; medium-to very fine-grained. Sericite partly replaces perthitic microcline, and sericite and epidote group minerals partly replace plagioclase. Plagioclase ranges from albite to oligoclase. Biotite ranges from less than 10% to accessory amounts in leucocratic unites; accessory magnetite locally present.

Generally unfoliated but includes localized foliated zones. Outcrops are rare, and unit mapped primarily on the presence of float

cobbles and quartz-rich residuum. CZvgf - Foliated equivalent of felsic meta-intrusive suite (Vance County pluton): Includes pale green to light gray +/chlorite, sericite quartz phyllite and phyllonite. Composite S-C fabric, and spaced cleavage common. Includes enclaves of

greenstone consisting of gray-green to green-black metabasalt and meta-andesite (CZab).

CZphc - chlorite schist, phyllite and phyllonite: Light greenish-gray to dark green, phyllitic rocks derived primarily from sheared intermediate and mafic intrusive rocks (CZdq, CZdi, and CZgbdi); includes chlorite, sericite phyllite and phyllonite; and, sericite, quartzo-feldspathic mylonite. Mylonitic fabric locally developed as millimeter-scale differentiated micaceous and quartzo-feldspathic laminae along with flattened and rotated polycrystalline quartz-plagioclase aggregates. Includes thin zones of foliated meta-quartz diorite (Czdq) and metagabbro (CZgbdi). S-C composite fabric common, and highly fractured and brecciated varieties occur near the Fishing Creek fault.

CZgb - metagabbro: Black to grayish-black melanocratic, fine- to medium-grained metagabbro. Relict pyroxene and metamorphic hornblende common; magnetite present in sufficient amounts to make the rock distinctly magnetic. Sheared varieties along the contact with the Fishing Creek fault zone include mylonite and blastomylonite with pink feldspar porphyroclasts; and, chlorite plagioclase phyllite typically with composite S-C

Falls Lake Terrane

CZfs - felsic schist: Orangish-gray, fine- to medium-grained, well foliated and lineated, and thinly banded, biotite-white CZfs

CZfu - ultramafic rocks (undivided): Variably altered ultramafic rocks including metapyroxenite, actinolite-chlorite schist,

Crabtree Terrane

CZrcg - Ruin Creek gneiss: Variably tan-orange to gray-orange, fine- to medium-grained, well foliated and lineated, porphyroclastic K-feldspar granitic gneiss. White mica and recrystallized K-feldspar define the shear foliation and

CZmcg - Middle Creek gneiss: Fine to coarse-grained, gneissic to schistose, locally lineated, mesocratic (CI less than 30),

biotite quartz dioritic to granodioritic gneiss. Interlayered with pink-gray to orange-tan, fine to medium-grained, locally lineated, leucocratic (CI less than 10) white mica biotite granitoid gneiss, and fine to medium-grained amphibolitic gneiss. CZmca – Middle Creek gneiss, mafic facies: dark grayish black to dark green, fine to medium-grained, foliated and lineated,

layered, epidote-bearing hornblende gneiss and amphibolite. Locally contains opaque mineral-rich metapyroxenite. CZum – Metaultramafic rock: Dark green to black, fine to coarse-grained massive to foliated talc-chlorite-actinolite schist